

Nuozhadu Hydropower Project

Nuozhadu hydropower station is located in Simao prefecture of Yunnan province. It is mainly for power generation and also with multifunctional purposes such as flood control of Jinghong City and improvement of downstream navigation. The power station has a total installed capacity of 5850MW and annual average power output of $239.12 \times 10^8 \text{ kW}\cdot\text{h}$. total The total storage capacity the reservoir is $237 \times 10^8 \text{ m}^3$. The key structures are composed of

gravel core rockfill dam, left bank open spillway, left bank flood releasing tunnel, right bank flood releasing tunnel, downstream bank protection and left bank underground powerhouse system. The rockfill dam has the height of 261.5m, which ranks the third in the world and the first in China in the similar dam type. The maximum flood discharge of the spillway is 31318 m^3 , which ranks the first in the bank spillway in the world.

Table.1 Main features

Location	Puer city, Yunnan	Purpose	Power generation
Hydrology & reservoir		Main Dam	
Catchment area	14.4710^4 km^2	Dam type	Central core rockfill dam
Average annual flow	54610^8 m^3	Max. dam height	261.5m
Normal area of reservoir	320 km^2	Crest length	608.16m
Total storage capacity	237.0310^8 m^3	Crest elevation	821.50 m
Storage capacity of NSL	217.4910^8 m^3		
Flood control storage	20.0210^8 m^3	Power generation	
		Max. power generation water head	535m
Spillway		Installed capacity	5850MW
Type	Side channel	Unit capacity	$9 \times 650 \text{ MW}$
Size of opening (number-width \times height)	8–15 \times 20m	Type of penstock	Single pipe
Length	1445 m	Type of turbine	Vertical shaft, mixed flow
Maximum flow speed	52 m/s		
Energy dissipation	Ski-jump	Main quantities	
Design flood discharge	$19398 \text{ m}^3/\text{s}$	Open excavation of earth & rock	$5261.02 \times 10^4 \text{ m}^3$
Check flood discharge	$31318 \text{ m}^3/\text{s}$	Tunnel excavation of rock	$627.72 \times 10^4 \text{ m}^3$
		Volume of earth and rock work	$3591.66 \times 10^4 \text{ m}^3$
Status	Under construction	Concrete	$474.69 \times 10^4 \text{ m}^3$

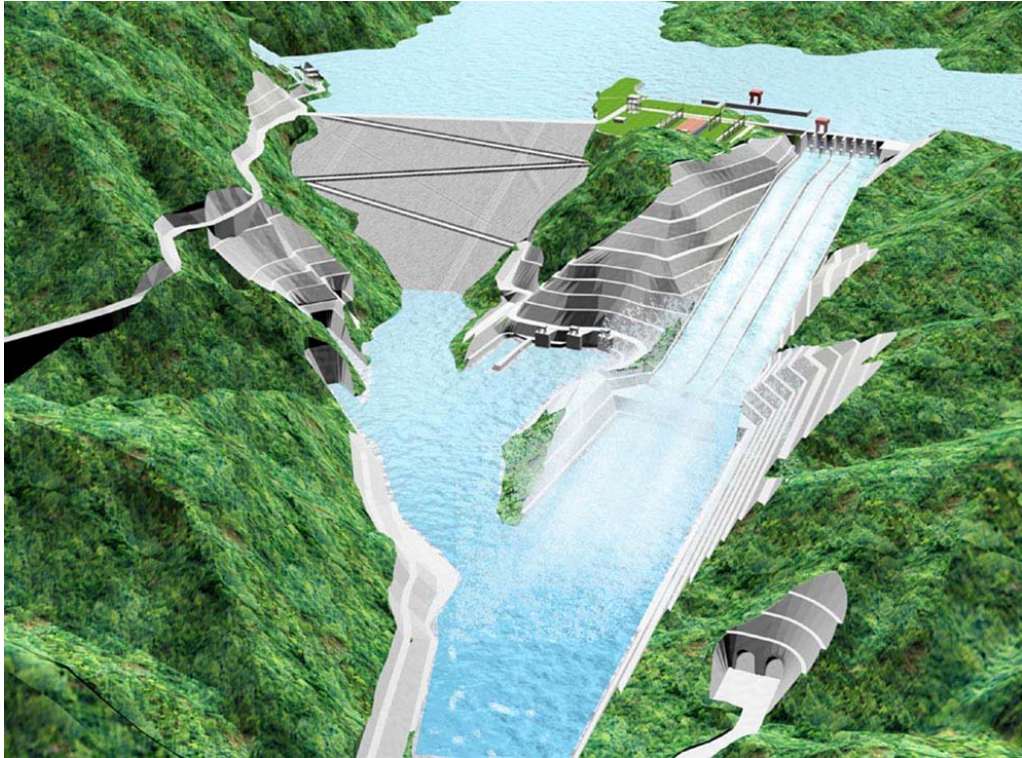


Fig.1 Bird view of Nuozhadu Hydropower Project

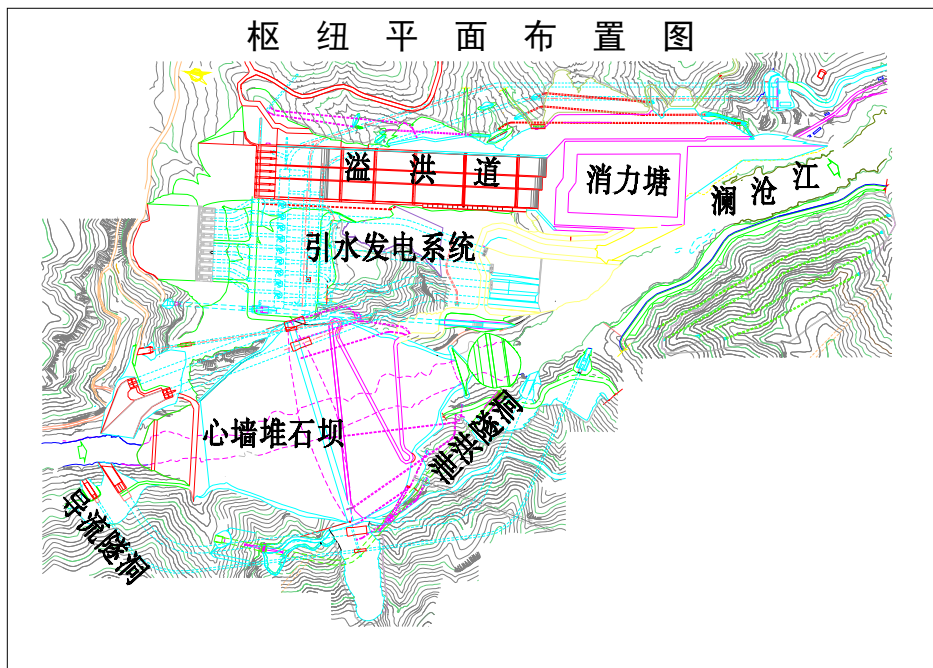


Fig.2 Layout of Nuozhadu Hydropower Project

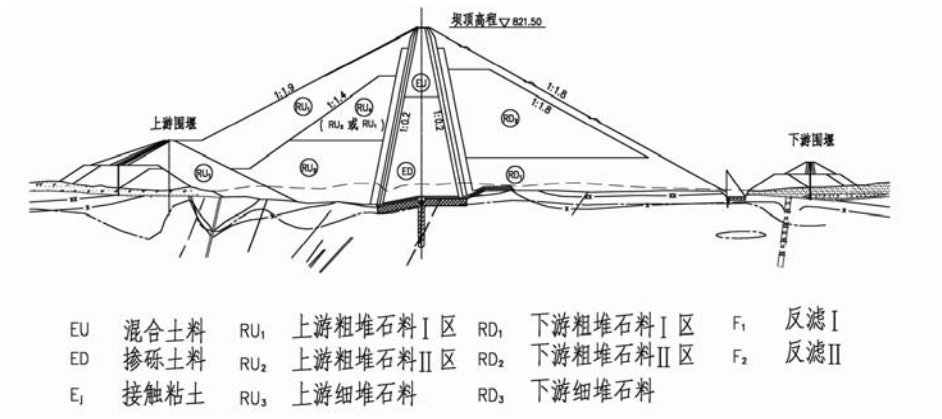


Fig.3 Typical section of the central core rockfill dam